chemical changes produced by light in aqueous solutions. The degree of freedom of an aqueous solution of chlorine from hydrochloric acid and of iodine from hydriodic acid was determined much more readily by means of the "voltaic balance" method than by ordinary chemical analysis.

III. "Relative Amounts of Voltaic Energy of dissolved Chemical Compounds." By G. GORE, F.R.S. Received January 16, 1889.

(Abstract.)

In this investigation the author has measured, by means of the "voltaic balance," the amounts of relative voltaic energy or of chemical affinity for zinc, of nearly 250 aqueous solutions of dissolved chemical compounds, at ordinary atmospheric temperatures. The substances include compounds of elements with elements; elements with monobasic, bibasic, and tribasic acids; acids of all these classes with each other; elements with monobasic, bibasic, tribasic, and tetrabasic salts; monobasic, bibasic, and tribasic acids with all these classes of salts; and all these classes of salts with each other in great variety. The method employed has been already described (see 'Roy. Soc. Proc.,' vol. 44, pp. 181, 294), and he offers the results thus obtained as additional evidence in support of the conclusion, that "*every electrolytic substance or mixture when dissolved in water unites chemically in definite proportions by weight with every other such dissolved body*, provided no separation of substance occurs;" and that "there may probably be discovered thousands of such compounds, which only exist whilst in aqueous solution, and are decomposed on evaporating or crystallising their solutions." The present research has shown the existence of nearly 250.

The formulæ of the compounds, together with the amounts of energy, are arranged in the form of a table as a volta tension series of electrolytes, commencing with $I+Cl$, which gives a plus number of $+11{,}686{,}507$, and ending with $2(H_3N+KHO)+(K_2CO_3+Na_2SO_3)$, which gives a minus one of $-959{,}817$. The whole of the formulæ agree with the ordinary chemical equivalents of the substances.